



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,181	12/10/2003	H. Montgomery Manning	MI22-2295	8043
21567	7590	12/29/2005	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			GHYKA, ALEXANDER G	
			ART UNIT	PAPER NUMBER
			2812	

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/733,181	Applicant(s) MANNING ET AL.	
	Examiner Alexander G. Ghyka	Art Unit 2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5 and 8-21 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5 and 8-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

ALEXANDER GHYKA
 PRIMARY EXAMINER

Av 2812
 Alex Ghyka

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

The non-elected claims have been cancelled. Claims 1, 3-5 and 8-21 are now under consideration.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-5 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Reinberg (US 2002/0086479).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Reinberg disclose the formation of capacitors which comprises forming conductive capacitor electrode material **28** within openings in a first material comprising silicon and oxygen **30** (borophosphosilicate glass, BPSG) (paragraph 21, column 2);

Art Unit: 2812

providing a retaining structure in physical contact with the at least some of the conductive capacitor electrode material, the retaining structure comprising a dielectric material comprising silicon and nitrogen **62** (silicon oxynitride) (paragraphs 24 and 26 in page 2) removing at least some of the first material while the retaining structure physically contacts the at least some of the conductive capacitor electrode material (page 2, paragraphs 24-26 , more specifically discussion of the different etch rates of BPSG and dielectric such as silicon oxynitride); and after removing at least some of the first material, incorporating the conductive capacitor electrode material into a plurality of capacitor devices (see paragraphs 27-30 on page 3); and wherein the first material is over the retaining structure **70**, which is also BPSG (paragraphs 32-33 on page 3). See Figures 1-11. Reinberg also discloses upwardly opening container structures **54** and pedestals **58** as required by present Claims 3 and 4. See Figure 6. Moreover, Reinberg et al disclose other dielectrics as required by present Claims 5 and 8. See page 3, paragraph 26. Therefore, Reinberg anticipate the present Claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

Art Unit: 2812

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 9-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reinberg (US 2002/0086479) in view of Dennison (US 5,340,763).

Reinberg is relied upon as discussed above.

However, Reinberg et does not disclose the use of silicon nitride and polysilicon as required by the present Claims . As discussed above, Reinberg et al disclose silicon oxynitride.

Dennison also discloses the formation of capacitors and disclose the use of BPSG as a dielectric **29** and silicon nitride **27** as a dielectric which is used to form a retaining structure as required by present Claims 9-14. See Figures 3-9 and column 3, lines 50-65. Dennison also discusses the high etch rate of the BPSG and the low wet etch rate of the nitride. See column 3, lines 59-62. Moreover, Dennison discloses the use of polysilicon **31** to fill container **30** to isolate the storage nodes from each other as required by present Claims 15-21. See column 2, line 65 to column 4, line 2.

It would have been obvious for one of ordinary skill in the art, at the time of the invention to use silicon nitride and polysilicon to support and insulate the capacitors of Reinberg, for their known benefit as support materials and insulators in capacitors as

Art Unit: 2812

disclosed by the Dennison reference. As both references pertain to capacitors which are supported by silicon and nitrogen containing dielectrics, which have lower etch rates than the oxide dielectrics, a *prima facie* case of obviousness is established.

Furthermore as both references pertain to capacitors having nitride containing supports, the use of a known material, silicon nitride as disclosed by Dennison instead of silicon oxynitride as disclosed by Reinberg, for its known purpose, support of the capacitors, is *prima facie* obvious. With respect to the relative thicknesses of the various layers, the discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. See *In re Antonie*, 195 USPQ 6 (CCPA 1977). In the present case, the selection of the thickness of dielectric and support materials, for their known benefit, is within the skill of one of ordinary skill in the art and is considered as a matter of optimization. Therefore, a *prima facie* case of obviousness is established.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander G. Ghyka whose telephone number is (571) 272-1669. The examiner can normally be reached on Monday through Thursday during general business hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AGG
December 26, 2005

ALEXANDER GHYKA
PRIMARY EXAMINER

Art 2812
